ANALYTICAL REPORT

Prepared by
LOCKHEED MARTIN

St. John Methyl Bromide Site
St. John, USVI

June 2015

EPA Work Assignment No. SERAS-270
LOCKHEED MARTIN Work Order No. SER00270
EPA Contract No. EP-W-09-031

Submitted to
R. Singhvi
EPA/ERT
2890 Woodbridge Avenue
Edison, NJ 08837

D. Killeen — Date 6/18/15
QA/QC Officer

K. Taylor — Date 6/18/15
Program Manager

Analysis by:
ERT/SERAS Laboratory

Prepared by:/Reviewed by:
Y. Mehra/ A. LoSurdo
Y.Mehra

Table of Contents

Appendices will be furnished on request.

TESTING LABORATORIES INFORMATION

Analysis of Volatile Organic Compounds in Air by SERAS SOP #1814, *"Analysis of Volatile Organic Compounds (VOCs) in SUMMA Canister Air Samples by Gas Chromatography/Mass Spectrometry (GC/MS)"*

ERT/SERAS Laboratory
2890 Woodbridge Avenue
Edison, NJ 08837

All analyses were performed according to our NELAP-approved quality assurance program. The test results meet the requirements of the current NELAP standards, where applicable, except as noted in the laboratory case narrative provided. Results are intended to be considered in their entirety and apply only to those analyzed and reported herein.

ERT/SERAS Laboratory is certified by the New Jersey Department of Environmental Protection, NELAP Laboratory Certification ID # 12023 for VOC analysis in air.

Detailed Sample Information

Laboratory Sample #	Field Sample #
R506003-01	9951
R506003-02	9952
R506003-03	9953
R506004-01	9954
R506004-02	9955
R506004-03	9956
R506004-04	9957
R506006-01	9881
R506006-02	9882
R506006-03	9883
R506006-04	9884
R506006-05	9885

Introduction

SERAS personnel, in response to WA# SERAS-270, provided analytical support for environmental samples collected from the St. John Methyl Bromide Site in St. John, USVI as described in the following table. The support also included QA/QC, data review and preparation of an analytical report containing analytical and QA/QC results.

The samples analyzed at SERAS were treated with procedures consistent with those specified in SERAS SOP #1008, *Sample Receiving, Handling and Storage.*

Chain of Custody #	Number of Samples	Sampling Date	Date Received	Date Analyzed	Matrix	Analysis/ Method	Laboratory	Data Package
06880	2	06/02/15	06/04/15	06/05/15	Air	VOC/SERAS SOP# 1814	ERT/SERAS	AA 092
06881	1	06/03/15						
07525	2	06/05/15	06/06/15	06/06/15				AA 093
06832	1							
	1	06/04/15						
06892	2	06/07/15	06/09/15	06/09/15				AA 095
06893	2							
06888	1				Trip Blank			

Case Narrative

Sampling was conducted as per the site-specific Quality Assurance Project Plan (QAPP) and analyzed by the analytical methods as stated in the QAPP. The laboratory reported the data to three significant figures. Any other representation of the data is the responsibility of the user. Data were validated using a Stage 4 validation done manually (S4VM) in accordance with the "Guidance for Labeling Externally Validated Data for Superfund Use." All data validation flags have been inserted into the results tables.

VOCs in Air Package AA 092, AA 093 and AA 095

The data were examined and found to be acceptable.

The results presented in this report only relate to the samples analyzed. All results are intended to be considered in their entirety. The Environmental Response Team/Scientific, Engineering, Response and Analytical Services laboratory is not responsible for utilization of less than the complete report.

Summary of Abbreviations

BFB	Bromofluorobenzene
BS	Blank Spike
BSD	Blank Spike Duplicate
^{O}C	Degree Centigrade
COC	Chain of Custody
conc	concentration
ctd	continued
PCDD/PCDF	Polychlorinated dibenzo-p-dioxins (PCDD) and Polychlorinated dibenzofurans (PCDF)
DFTPP	Decafluorotriphenylphosphine
EMPC	Estimated maximum possible concentration
GC/ECD	Gas Chromatography/Electron Capture Detector
GC/MS	Gas Chromatography/ Mass Spectrometry
Hg-CVAA	Mercury-Cold Vapor Atomic Absorption
ICP-AES	Inductively Coupled Plasma- Atomic Emission Spectroscopy
ID	Identification
IS	Internal Standard
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MDA	Minimum Detectable Activity
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
MW	Molecular Weight
NA	Not Applicable or Not Available
NAD	Normalized Absolute Difference
NC	Not Calculated
NR	Not Requested/Not Reported
% D	Percent Difference
% R	Percent Recovery
SOP	Standard Operating Procedure
PCB	Polychlorinated Biphenyl
PDS	Post Digestion Spike
Percent RSD	Percent Relative Standard Deviation
ppbv	parts per billion by volume
ppm	parts per million
pptv	parts per trillion by volume
QA/QC	Quality Assurance/Quality Control
QAPP	Quality Assurance Project Plan
RL	Reporting Limit
RPD	Relative Percent Difference
S4VM	Stage 4 validation done manually
SIM	Selected Ion Monitoring
SERAS	Scientific Engineering Response and Analytical Services
TIC	Tentatively Identified Compound
TCLP	Toxicity Characteristic Leaching Procedure
SVOC	Semi Volatile Organic Compound
VOC	Volatile Organic Compound
*	Value exceeds the acceptable QC limits

m^3	cubic meter	g	gram	kg	kilogram	L	liter
µg	microgram	µL	microliter	mg	milligram	mL	milliliter
ng	nanogram	pg	picogram	pCi	picocurie	σ	sigma

Data Validation Flags

J	Value is estimated	R	Rejected or Value is unusable
J+	Value is estimated high	U	Not detected
J-	Value is estimated low	UJ	Not detected and RL is estimated

Rev. 01/01/15, YRM

Environmental Response Team/Scientific Engineering, Response and Analytical Services
2890 Woodbridge Avenue, Building 209 Annex
Edison NJ 08837

Table 1.1a Results of the Analysis for VOC (ppbv) in Air
WA# SERAS-270, St. John Methyl Bromide Response

Method SERAS SOP #1814

SERAS Sample Number	N/A	R506003-01	R506003-02	R506003-03
Sample Number	Method Blank 060515-01	9951	9952	9953
Sample Location	N/A	Kitchen	Kitchen	Kitchen

	Result	*RL*	Result	*RL*	Result	*RL*	Result	*RL*
Analyte	ppbv	ppbv	ppbv	ppbv	ppbv	ppbv	ppbv	ppbv
Bromomethane	U	0.0200	0.0610	0.0200	0.100	0.100	0.270	0.100

Table 1.1a (cont) Results of the Analysis for VOC (ppbv) in Air
WA# SERAS-270, St. John Methyl Bromide Response

Method SERAS SOP #1814

SERAS Sample Number	N/A	R506004-03	R506004-01	R506004-02
Sample Number	PS-Method Blank 060615-01	9956	9954	9955
Sample Location	N/A	Kitchen Cabinet	Kitchen Cabinet	Kitchen

	Result	*RL*	Result	*RL*	Result	*RL*	Result	*RL*
Analyte	ppbv	ppbv	ppbv	ppbv	ppbv	ppbv	ppbv	ppbv
Bromomethane	U	0.0200	0.647	0.0200	0.271	0.100	U	0.100

Table 1.1a (cont) Results of the Analysis for VOC (ppbv) in Air
WA# SERAS-270, St. John Methyl Bromide Response

Method SERAS SOP #1814

SERAS Sample Number	R506004-04
Sample Number	9957
Sample Location	Kitchen/Living room

	Result	*RL*
Analyte	ppbv	ppbv
Bromomethane	0.414	0.100

Table 1.1a (cont) Results of the Analysis for VOC (ppbv) in Air
WA# SERAS-270, St. John Methyl Bromide Response

Method SERAS SOP #1814

SERAS Sample Number	N/A	R506006-05	R506006-01	R506006-03
Sample Number	PS-Method Blank 060915-01	9885	9881	9883
Sample Location	N/A	Trip Blank	Kitchen/Living room	Master Bedroom

	Result	*RL*	Result	*RL*	Result	*RL*	Result	*RL*
Analyte	ppbv	ppbv	ppbv	ppbv	ppbv	ppbv	ppbv	ppbv
Bromomethane	U	0.0200	0.0389	0.0200	0.531	0.0200	0.541	0.0198

Table 1.1a(cont.) Result of the Analysis for VOC (ppbv) in Air
WA# SERAS-270, St. John Methyl Bromide Response

Method SERAS SOP #1814

SERAS Sample Number	R506006-04	R506006-02
Sample Number	9884	9882
Sample Location	Bedroom	Patio AA

	Result	*RL*	Result	*RL*
Analyte	ppbv	ppbv	ppbv	ppbv
Bromomethane	0.370	0.0200	U	0.0200

Table 1.1b Results of the Analysis for VOC (µg/m^3) in Air
WA# SERAS-270, St. John Methyl Bromide Response

Method SERAS SOP #1814

SERAS Sample Number	N/A		R506003-01		R506003-02		R506003-03	
Sample Number	Method Blank 060515-01		9951		9952		9953	
Sample Location	N/A		Kitchen		Kitchen		Kitchen	
Analyte	Result µg/m^3	*RL* µg/m^3	Result µg/m^3	*RL* µg/m^3	Result µg/m^3	*RL* µg/m^3	Result µg/m^3	*RL* µg/m^3
Bromomethane	U	0.0777	0.237	0.0777	0.389	0.388	1.05	0.388

Table 1.1b (cont) Results of the Analysis for VOC (µg/m^3) in Air
WA# SERAS-270, St. John Methyl Bromide Response

Method SERAS SOP #1814

SERAS Sample Number	N/A		R506004-03		R506004-01		R506004-02	
Sample Number	PS-Method Blank 060615-01		9956		9954		9955	
Sample Location	N/A		Kitchen Cabinet		Kitchen Cabinet		Kitchen	
Analyte	Result µg/m^3	*RL* µg/m^3	Result µg/m^3	*RL* µg/m^3	Result µg/m^3	*RL* µg/m^3	Result µg/m^3	*RL* µg/m^3
Bromomethane	U	0.0777	2.51	0.0777	1.05	0.388	U	0.388

Table 1.1b (cont) Results of the Analysis for VOC (µg/m^3) in Air
WA# SERAS-270, St. John Methyl Bromide Response

Method SERAS SOP #1814

SERAS Sample Number	R506004-04		
Sample Number	9957		
Sample Location	Kitchen/Living room		
Analyte	Result µg/m^3	*RL* µg/m^3	
Bromomethane	1.61	0.388	

Table 1.1b (cont) Results of the Analysis for VOC (µg/m^3) in Air
WA# SERAS-270, St. John Methyl Bromide Response

Method SERAS SOP #1814

SERAS Sample Number	N/A	R506006-05	R506006-01	R506006-03
Sample Number	PS-Method Blank 060915-01	9885	9881	9883
Sample Location	N/A	Trip Blank	Kitchen/Living room	Master Bedroom

Analyte	Result µg/m^3	*RL* µg/m^3	Result µg/m^3	*RL* µg/m^3	Result µg/m^3	*RL* µg/m^3	Result µg/m^3	*RL* µg/m^3
Bromomethane	U	0.0777	0.151	0.0777	2.06	0.0777	2.10	0.0770

Table 1.1b Results of the Analysis for VOC (µg/m^3) in Air
WA# SERAS-270, St. John Methyl Bromide Response

Method SERAS SOP #1814

SERAS Sample Number	R506006-04	R506006-02
Sample Number	9884	9882
Sample Location	Bedroom	Patio AA

Analyte	Result µg/m^3	*RL* µg/m^3	Result µg/m^3	*RL* µg/m^3
Bromomethane	1.44	0.0777	U	0.0777

Table 2.1 Results of the LCS Analysis for VOC in Air
WA# SERAS-270, St. John Methyl Bromide Response

Sample ID: LCS 060515

Analyte	LCS Spike Amount ppbv	LCS Recovered ppbv	% Recovery	QC Limits % Recovery
Bromomethane	1.00	1.17	117	72 - 139

Sample ID: LCS 060615

Analyte	LCS Spike Amount ppbv	LCS Recovered ppbv	% Recovery	QC Limits % Recovery
Bromomethane	1.00	1.17	117	72 - 139

Sample ID: LCS 060915

Analyte	LCS Spike Amount ppbv	LCS Recovered ppbv	% Recovery	QC Limits % Recovery
Bromomethane	1.00	1.17	117	72 - 139

Table 2.2 Results of the Duplicate Analysis for VOC in Air
WA# SERAS-270, St. John Methyl Bromide Response

Sample ID: 9953

Analyte	Initial Analysis ppbv	Duplicate Analysis ppbv	RPD	QC Limit RPD
Bromomethane	0.270	0.269	0	≤25

Sample ID: 9957

Analyte	Initial Analysis ppbv	Duplicate Analysis ppbv	RPD	QC Limit RPD
Bromomethane	0.414	0.411	1	≤25

Sample ID: 9881

Analyte	Initial Analysis ppbv	Duplicate Analysis ppbv	RPD	QC Limit RPD
Bromomethane	0.531	0.559	5	≤25

REAC, Edison, NJ
(732) 321-4200
EPA Contract 68-C99-223

CHAIN OF CUSTODY RECORD

Project Name: St. Tom ER
Project Number: 270
LM Contact: G. Bahl Phone: 609-760-7504

No: 06080
Sheet 01 of 01 (Do not copy)
(for addnl. samples use new form)

SERAC-278-DAR-0517115

WO# R506003

Sample Identification — **Analyses Requested**

REAC	Sample No	Sampling Location	Matrix	Date Collected	# of Bottles	Container/Preservative	Final Pressure	Can #	TO-15	Start Pressure	
01	9951	Kitchen	Air	6/2/15	1	Summa Canister	0	14396	✓	-29.5	
02	9952	Kitchen	Air	6/2/15	1	Summa Canister	0	13735	✓	-30	

Matrix:

A- Air	PW- Potable Water
AT-Animal Tissue	S- Soil
DL- Drum Liquids	SD- Sediment
DS- Drum Solids	SL- Sludge
GW- Groundwater	SW- Surface Water
O- Oil	TX-TCLP Extract
PR-Product	W- Water
PT-Plant Tissue	X- Other

Special Instructions:

Methyl Bromide

SAMPLES TRANSFERRED FROM CHAIN OF CUSTODY #:

Items/Reason	Relinquished by	Date	Received by	Date	Time	Items/Reason	Relinquished by	Date	Received by	Date	Time
All Analysis		6/3/15		6/4/15	10:30	All Analysis		6/5/15		6/5/15	04:00

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SERAS-270 DAR-061715

CHAIN OF CUSTODY RECORD

Project Name: St. Joe / ER
Project Number: 220
LM Contact: G. Bell Phone: 609-760-7506

No: 06081
Sheet 01 of 01 (Do not copy)
(for addnl. samples use new form)

WO# R506003

Sample Identification | **Analyses Requested**

REAC #	Sample No	Sampling Location	Matrix	Date Collected	# of Bottles	Container/Preservative	I Pressure	F. Pressure	Can #	TO-15	
06	9953	Kitchen	Air	6/3/15	1	Summa Canister	29.6"	0"	14254	✓	X

Matrix:

A- Air
AT-Animal Tissue
DL- Drum Liquids
DS- Drum Solids
GW- Groundwater
O- Oil
PR-Product
PT-Plant Tissue
PW- Potable Water
S- Soil
SD- Sediment
SL- Sludge
SW- Surface Water
TX-TCLP Extract
W- Water
X- Other

Special Instructions:

Methyl Bromide

SAMPLES TRANSFERRED FROM CHAIN OF CUSTODY #:

Items/Reason	Relinquished by	Date	Received by	Date	Time	Items/Reason	Relinquished by	Date	Received by	Date	Time
All Analysis	J. Bell	6/3/15	[illegible]	6/5/15	10:30	All Analysis	[illegible]	6/5/15	J. Bell	6/5/15	04:30

☆ U.S. GPO: 2000-521-151

REAC, Edison, NJ
(732) 321-4200
EPA Contract 68-C99-223

CHAIN OF CUSTODY RECORD

Project Name: SERA03 SER00270
Project Number: SER00270
LM Contact: Jesse Yousefian Phone: 9084153546

No: 06832
Sheet 01 of 01 (Do not copy)
(for addnl. samples use new form)

SERA0270-DAR-061715

WO#R506004

Sample Identification TM 6/8/15

Analyses Requested

REAC #	Sample No	Sampling Location	Matrix	Date Collected	# of Bottles Summas	Container/Preservative	Start pressure	Volume	Time	Summa #	MeBr
01	9954	Kitchen/*	A	6/4/15	1	Summa/None	-29.6	6(L)	1600	14253	✓
02	9955	Kitchen	A	6/5/15	1	Summa/None	-29.6	6(L)	0859	14242	✓

*Cabinet TM 6/8/15

Matrix:
A- Air
AT-Animal Tissue
DL- Drum Liquids
DS- Drum Solids
GW- Groundwater
O- Oil
PR-Product
PT-Plant Tissue
PW- Potable Water
S- Soil
SD- Sediment
SL- Sludge
SW- Surface Water
TX-TCLP Extract
W- Water
X- Other

Special Instructions: Analyze for Bromo Methane. Grab samples taken in Lower J both in Kitchen 9954 on 6/4/15 after baking unit. 9955 6/5/15 after ventilation post baking.

SAMPLES TRANSFERRED FROM CHAIN OF CUSTODY #:

Items/Reason	Relinquished by	Date	Received by	Date	Time	Items/Reason	Relinquished by	Date	Received by	Date	Time
All/Analysis	[signature]	6/5/15	[signature]	6/6/15	11:30	All/Analysis	[signature]	6/8/15	[signature]	6/8/15	9:00
All/Analysis	[signature]	6/8/15	[signature]	6/8/15	09:15						

U.S. GPO: 2000-521-151

REAC, Edison, NJ
(732) 321-4200
EPA Contract 68-C99-223

SERA-27-RAR-061715

CHAIN OF CUSTODY RECORD

Project Name: SERA03 ERD0270
Project Number: SER 00270
LM Contact: Josie Yousefian Phone: 9084153546

No: 07525
Sheet 01 of 01 (Do not copy)
(for addnl. samples use new form)

WO# R506004

Sample Identification

Analyses Requested

REAC #	Sample No	Sampling Location	Matrix	Date Collected	Summa # of ~~Bottles~~	Container/Preservative	Start pressure	Volume	Time	Summa number	MeBr
03	9956	Kitchen Cabinet	A	6/5/15	1	Summa/None	-29.4	6(L)	1230	14403	✓
04	9957	Kitchen/Livingroom	A	6/5/15	1	Summa/None	-29.6	6(L)	1230	14246	✓

Matrix:

(A- Air)
AT-Animal Tissue
DL- Drum Liquids
DS- Drum Solids
GW- Groundwater
O- Oil
PR-Product
PT-Plant Tissue
PW- Potable Water
S- Soil
SD- Sediment
SL- Sludge
SW- Surface Water
TX-TCLP Extract
W- Water
X- Other

Special Instructions:

Grab samples taken after (5/14/15) baking/ventilation had stopped. In (5/14/15-5/15/15) afternoon, Analyze for Bromomethane.

SAMPLES TRANSFERRED FROM CHAIN OF CUSTODY #:

Items/Reason	Relinquished by	Date	Received by	Date	Time
1) Analysis		6/5/15		6/6/15	11:30
All Analysis		6/5/15		6/8/15	09:15

Items/Reason	Relinquished by	Date	Received by	Date	Time
1) Analysis		5/8/15		6/8/15	9:00

☆ U.S. GPO: 2000-521-151

REAC, Edison, NJ
(732) 321-4200
EPA Contract 68-C99-223

CHAIN OF CUSTODY RECORD

Project Name: SERAS / SER00270
Project Number: SER00270
LM Contact: J. Younghein Phone: 9084483546

No: 06892
Sheet 01 of 01 (Do not copy)
(for addnl. samples use new form)

SERAS-270-DAR-061715

WO#R506006

Sample Identification / **Analyses Requested**

REAC #	Sample No	Sampling Location	Matrix	Date Collected	# of Bottles (Summas)	Container/Preservative	Flow	Summa	Orifice	End pressure	MeBr
01	9881	Kitchen/Living room	A	6/6-6/7/15	1	Summa/None	-3.52	13749	13993	-5	✓
02	9882	Patio AA	A	6/6-6/7/15	1	Summa/None	-3.67	14258	13782	-3.5	✓

[signature]

Matrix:

- A- Air (circled)
- AT-Animal Tissue
- DL- Drum Liquids
- DS- Drum Solids
- GW- Groundwater
- O- Oil
- PR-Product
- PT-Plant Tissue
- PW- Potable Water
- S- Soil
- SD- Sediment
- SL- Sludge
- SW- Surface Water
- TX-TCLP Extract
- W- Water
- X- Other

Special Instructions:

To Be analyzed for Bromo Methane
All windows closed, exhaust fans off, ventilation off.

SAMPLES TRANSFERRED FROM
CHAIN OF CUSTODY #:

Items/Reason	Relinquished by	Date	Received by	Date	Time	Items/Reason	Relinquished by	Date	Received by	Date	Time
1/Analysis 03	[signature]	6/8/15	[signature]	6/9/15	12:45	All/Analysis	[signature]	6/9/15	[signature]	6/9/15	13:06

REAC, Edison, NJ
(732) 321-4200
EPA Contract 68-C99-223

SERA 57 TDAR 061715

CHAIN OF CUSTODY RECORD

Project Name: SERA SER00270
Project Number: SER00270
LM Contact: J. Yousefi Phone: 9084153546

No: 06893
Sheet 01 of 01 (Do not copy)
(for addnl. samples use new form)

WO# R506006

Sample Identification

Analyses Requested

REAC#	Sample No	Sampling Location	Matrix	Date Collected	# of ~~Bottles~~ Summa	Container/Preservative	flow	Summa	Onflow	final pressur	MeBr
04	9883	Master Bedroom	A	6/6-6/7/15	1	Summa / None	-3.37	14067	14047	-6.5	✓
04	9884	Bedroom	A	6/6-6/7/15	1	Summa/None	-3.64	14066	14011	-6	✓

Matrix:
A- Air
AT-Animal Tissue
DL- Drum Liquids
DS- Drum Solids
GW- Groundwater
O- Oil
PR-Product
PT-Plant Tissue
PW- Potable Water
S- Soil
SD- Sediment
SL- Sludge
SW- Surface Water
TX-TCLP Extract
W- Water
X- Other

Special Instructions:
TO analyze for Bromo Methane. All windows closed, exhaust fans off, ventilation off.

SAMPLES TRANSFERRED FROM CHAIN OF CUSTODY #:

Items/Reason	Relinquished by	Date	Received by	Date	Time	Items/Reason	Relinquished by	Date	Received by	Date	Time
1 Analysis 4		6/8/15		6/9/15	12:45	All Analysis 3		6/9/15		6/9/15	13:20

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(732) 321-4200
EPA Contract 68-C99-223

SERA#: 27-PAR-061715

CHAIN OF CUSTODY RECORD

Project Name: SERA01 SER00270
Project Number: SER00270
LM Contact: J. Youssefian Phone: 9084153546

No: 06088
Sheet **01** of **01** (Do not copy)
(for addnl. samples use new form)

WO#R506006

Sample Identification | **Analyses Requested**

REAC	Sample No	Sampling Location	Matrix	Date Collected	# of Bottles (Summas)	Container/Preservative	Time	Pressure	Summa	Volume	MeBr
05	9885	Trip Blank	A	6/7/15	1	Summa None	1300	-29.5	1374	6(L)	✓

Matrix:
(A- Air)
AT-Animal Tissue
DL- Drum Liquids
DS- Drum Solids
GW- Groundwater
O- Oil
PR-Product
PT-Plant Tissue
PW- Potable Water
S- Soil
SD- Sediment
SL- Sludge
SW- Surface Water
TX-TCLP Extract
W- Water
X- Other

Special Instructions:
Trip Blank for 24-hour Summa Sampling event. To be analyzed for Bromo Methane.

SAMPLES TRANSFERRED FROM CHAIN OF CUSTODY #:

Items/Reason	Relinquished by	Date	Received by	Date	Time	Items/Reason	Relinquished by	Date	Received by	Date	Time
1/Analysis		6/8/15		6/9/15	13:45	All/Analysis		6/9/15		6/9/15	13:06

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